Quick Installation Guideline

for solar pumping inverter

JNP1K1L JNP1K5L JNP2K2L
JNP3KL JNP3K7L
JNP2K2H JNP3KH JNP3K7H JNP4KH JNP5K5H JNP7K5H
and JNP4KL
JNP11KH JNP15KH JNP18K5H
JNP22KH JNP30KH JNP37KH JNP45KH JNP55KH

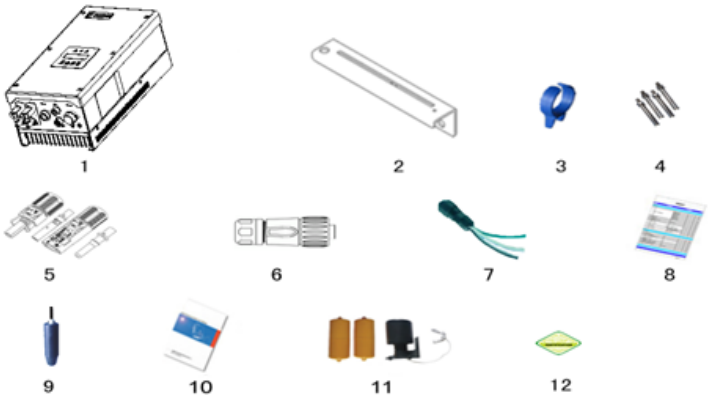
CONTENT

Quick Installation Guideline for solar pumping inverter – JNP1K1L JNP1K5L JNP2K2L

1. Inverter Unpacking

Check according to Packing List whether all the parts are correct and in good condition or not.

Accessories are shown as below:



No.	Description	No.	Description
1	PV pump inverter	7	Sensor and communication connector (Optional)
2	Installation bracket	8	Packing list
3	Blue Ring tool	9	Water level sensor (Optional)
4	Expansion bolt	10	Quick Installation Guideline
5	PV connector	11	Water level sensor (Optional)
6	AC connector	12	Certificate of inspection

2. Installation

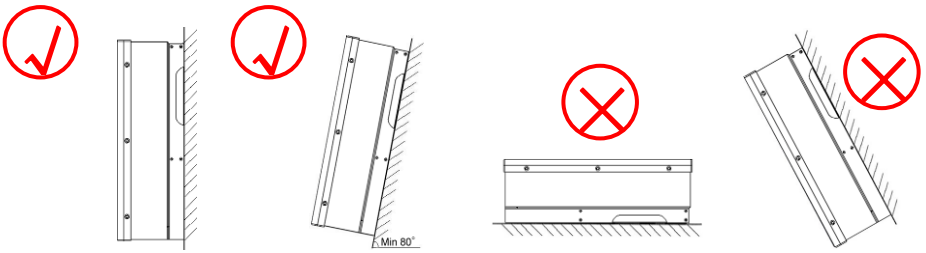
2.1 Prepare Installation Tools

The following tools will be needed in inverter installation and wire connection.

Sketch map	Name	Recommend specification	Function
	Wire crimpers	M2.5~M8	Crimp the PV cable core in connector tube for PV connector.
	Electric drill	Φ8	Used for drilling holes for installation bracket.
	Straight screwdriver	Φ3	Used for AC side wire installation
	Cross screwdriver	Φ5	Used for installing and disassembling inverter cover

2.2 Installation Direction and spacing dimension

The inverter shall be installed vertically or tilted backwards with a maximum angle of 10°

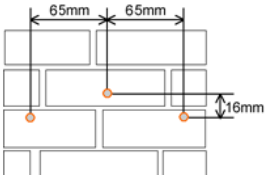


The minimum installation spacing dimensions are shown below:

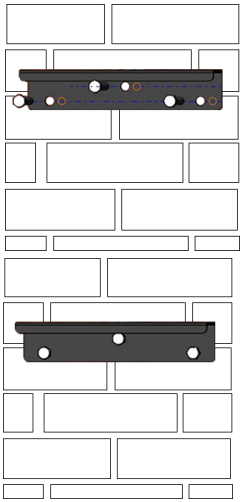
Direction	Minimum spacing	Direction	Minimum spacing
Above	100cm	Sides	100cm
Below	100cm	Front	100cm

2.3 Installation of Inverter

Step1:
Drill holes in the selected installation position according to the size and shape of installation bracket.

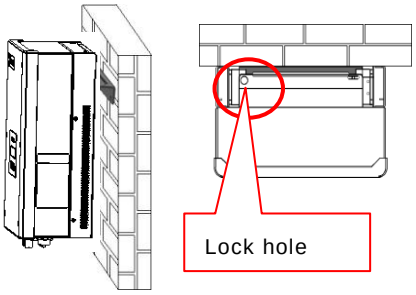


Step2:
Fix installation bracket in the located holes with bolts.



Step3:
Tighten the bolts, make the bolts cling to the wall.

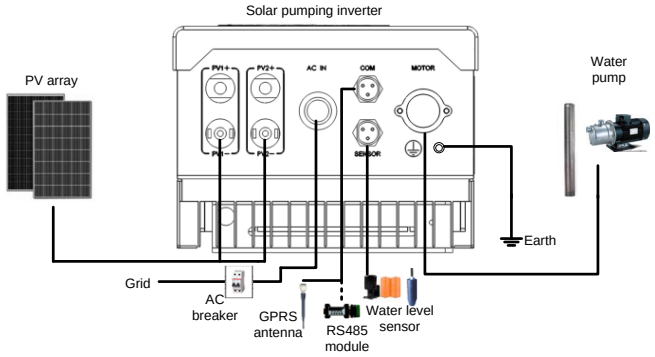
Step4:
Hang firmly inverter onto the installation bracket, then lock the hole.



3 Electrical Connection

3.1 Connecting Terminals of Inverter

The input and output terminals are shown as below:



Terminals Description

Terminals	Description
PV1+/ PV2+	PV array DC positive input terminals
PV1-/ PV2-	PV array DC negative input terminals
AC IN	AC input terminals (optional)
MOTOR	Output terminal, connect with AC pump
SENSOR	Water level sensor signal input terminal (optional)
COM	RS485 or GPRS communication interface (optional)
⏚	Ground terminal

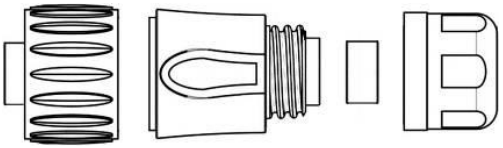
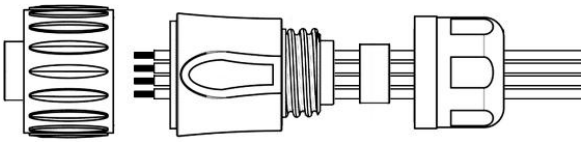
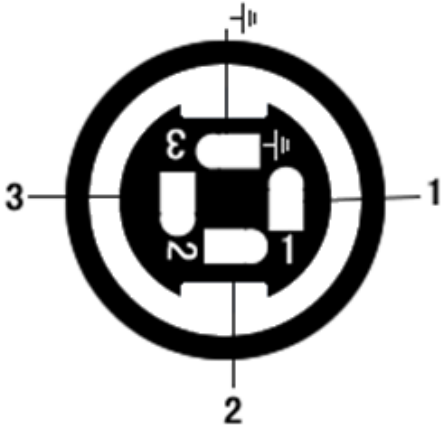
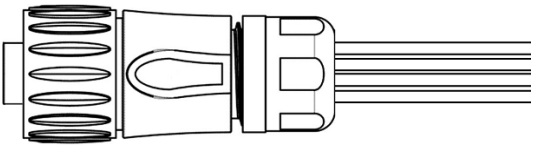
3.2 Cable Selection for Electrical Connection

User can select cables for electrical connection according to the following specifications.

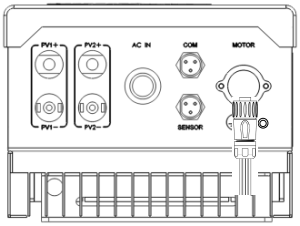
Inverter	**Cable range（AWG）**			**Cable recommended（AWG）**		
	DC side	**AC side**		**DC side**	**AC side**	
	PV+、PV-	**U、V、W**	**PE**	**PV+、PV-**	**U、V、W**	**PE**
JNP1K1L	14-12	14-12	12	12	12	12
JNP1K5L	14-12	14-12	12	12	12	12
JNP2K2L	14-12	14-12	12	12	12	12

3.3 AC Side Electrical Connection

Step1: Connecting of the wire of the connector:

Operation Instruction	Operation Demonstration
1. Unscrew the terminal of all components.	
2. Prepare the cable and bare the ends of U,V,W and PE wire in 7mm. Insert the cable through the nut and middle sleeve.	
3. Insert the bared U,V,W and PE wires ends into the corresponding four holes of the connector terminal and then fully tighten all screws. The polarity of each hole is signed around the holes. Please note that wire U must be connected to hole 1, wire V to hole 2, wire W to hole 3, and wire PE to hole ⏚.	
4. After fasten the wires with the terminal, combine every component together, and screw them tightly.	

Step2**:** Plug the AC connector into the motor terminal at the bottom of the inverter, tighten the nut of connector.

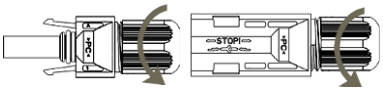


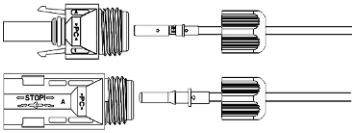
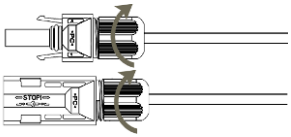
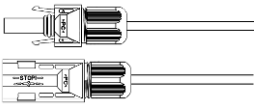
Note！The phase sequence of AC pump motor and inverter should be corresponding, and if connection error occurs, there will be no water output or only with small water flow. Phase sequence's connection is right or not shall be inspected when it's trial running for the first time.

3.4 DC Side Connection

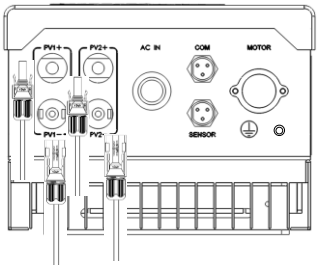
Danger！**DC side electric connection** must be off, otherwise, it may cause casualty!

Step1: Please connect the DC wire according to the following steps:

Operation Instruction	Operation Demonstration
1. Unscrew the fastening nuts of MC4 connector.	

2. Strip off the DC cable insulation layer to a length of approx. 7mm.Insert the exposed end of PV Cable into the connector tube, and press tightly with wire crimpers.	
3. Effect figure. **Remember! ! !** Terminals and connectors match the core, is not reversed.	
4. Pull the above finished cable with tube through the fastening nut.	
5. Plug it into the wiring slot until a sound being heard, which indicating plug into the right place. Then tighten the nut.	
6. Effect figure	

Step2: Plug the positive and negative connector into the corresponding terminals at the bottom of the inverter respectively.



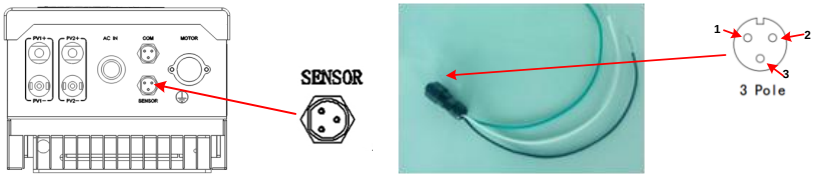
3.5 Inverter grounding

Make sure the reliable connection between ground ⏚ terminal of Inverter and the earth!

3.6 Water Level Sensor Connection

3.6.1 **Water level sensor interface define**

Water level sensor connector pins in inverter panel port are defined are shown below:



Terminal（SENSOR）connector pin	**Detail**
pin1	Dry protection pin, Connected black cable
pin2	Overflow protection pin, Connected white cable
pin3	Dry protection and Overflow protection common pin, Connected green cable

3.6.2 **Water level sensor connection**

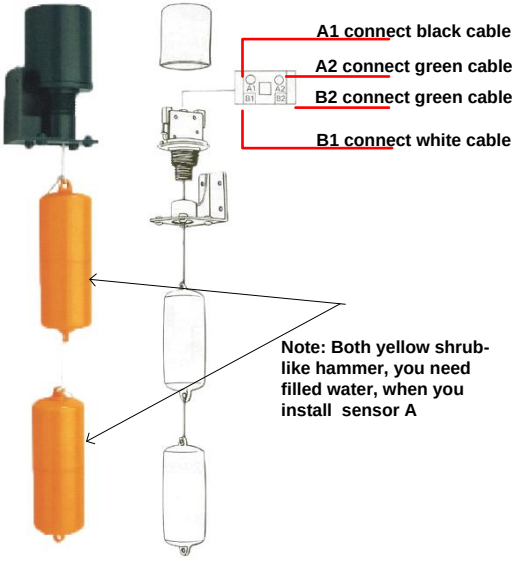
Two kinds of water level sensor you can select are shown below:

Sensor A Sensor B

Notice!

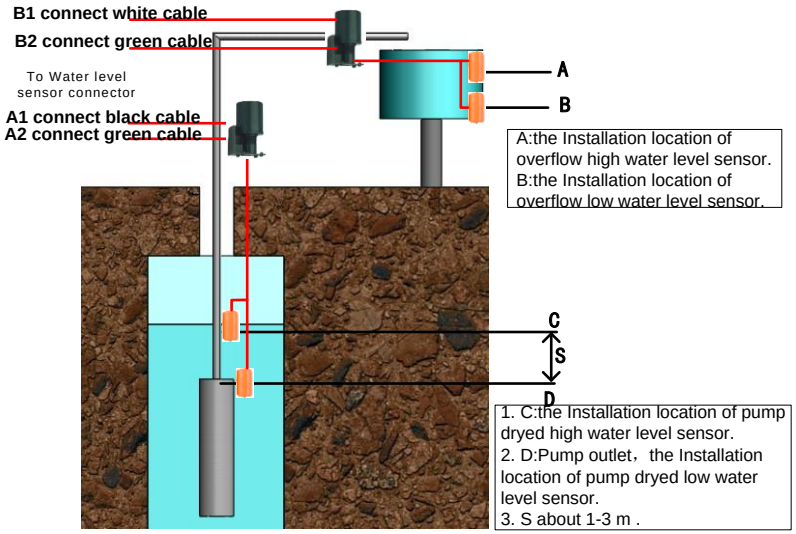
If you select overflow protection water level sensor, you need to set the value of “OF-F”, the LCD menu ”Settings” → "Para Set" → "OF-F" to modify to “ON”. The setting method with reference to “21 Commissioning” .

If you selected water level sensor A, then water sensor installation method is shown below:



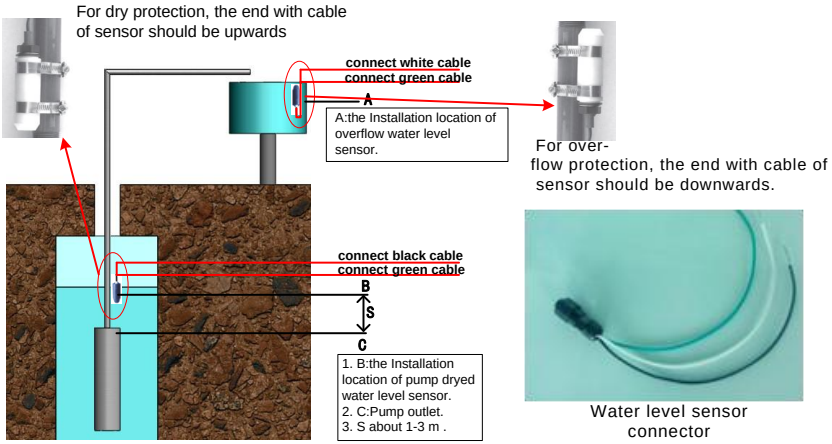
Water level sensor connector

The detail figure of Sensor A



The installation figure of Sensor A

If you selected water level sensor B, then water sensor installation method is shown below:



The installation figure of Sensor B

Notice!

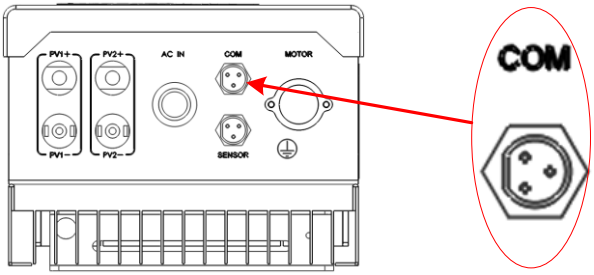
If you choose Water Level Sensor B, please note the following aspects when intall:

1. For dry protection, the end with cable of sensor should be upwards;

2. For over-flow protection, the end with cable of sensor should be downwards.

3.7 Communication connection

Communication connector pins in inverter panel port are defined are shown below:



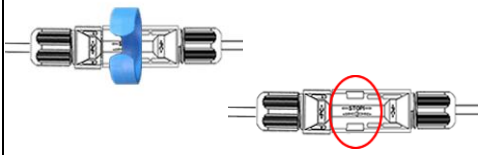
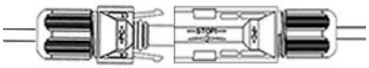
Note：More information about the communication module, please refer to the **User and Installation Manual**.

4 Disassembling

4.1 The Disassembling of PV Connector

Please operate as following:

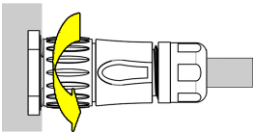
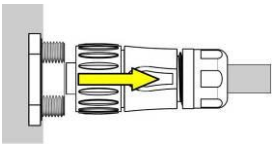
Operation instructions	Demonstration picture
DC SWITCH should be OFF before operation, and This blue ring tool shall be used to disconnect MC4	

Step 1: Putting blue ring tool into the hole of the MC4 totally, as shown on the picture.	
Step 2: it will be taken apart easily.	

4.2 The Disassembling of AC Connector

No professional tools are required. Just unscrew the connector as shown on the picture.

Please operate as following:

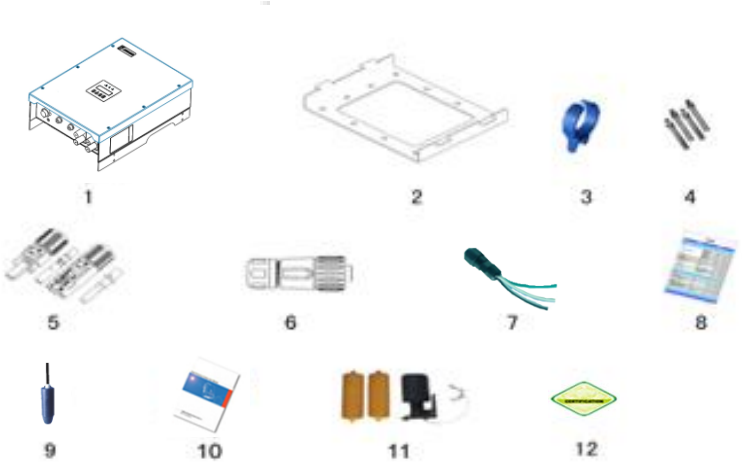
Operation instructions	Demonstration picture
Step 1: Unscrew the nut as shown on the picture.	
Step 2: Remove the connector.	

Quick Installation Guideline for solar pumping inverter – JNP3KL JNP3K7L

5. Inverter Unpacking

Check according to Packing List whether all the parts are correct and in good condition or not.

Accessories are shown as below:



No.	Description	No.	Description
1	PV pump inverter	7	Sensor and communication connector (Optional)
2	Installation bracket	8	Packing list
3	Blue Ring tool	9	Water level sensor (Optional)
4	Expansion bolt	10	Quick Installation Guideline
5	PV connector	11	Water level sensor (Optional)
6	AC connector	12	Certificate of inspection

6. Installation

6.1 Prepare Installation Tools

Please refers to “2.1 Prepare Installation Tools”.

6.2 Installation Direction and spacing dimension

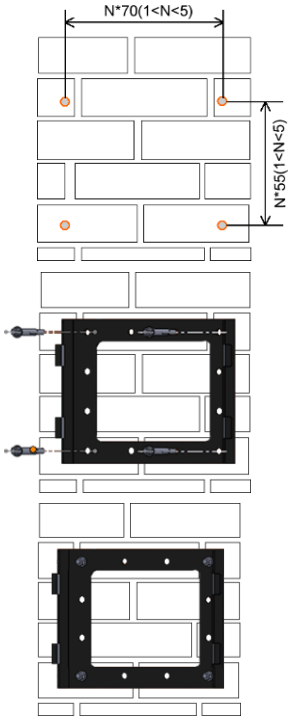
Please refers to “2.2 Installation Direction and spacing dimension”.

6.3 Installation of Inverter

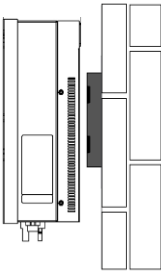
Step1:
Drill holes in the selected installation position according to the size and shape of installation bracket.

Step2:
Fix installation bracket in the located holes with bolts.

Step3:
Tighten the bolts, make the bolts cling to the wall.



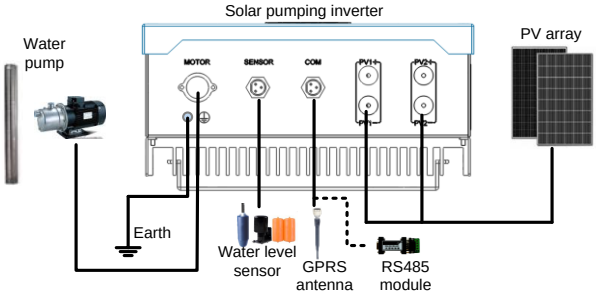
Step4:
Hang firmly inverter onto the installation bracket.



7 Electrical Connection

7.1 Connecting Terminals of Inverter

The input and output terminals are shown as below:



Terminals Description

Terminals	Description
PV1+/ PV2+	PV array DC positive input terminals
PV1-/ PV2-	PV array DC negative input terminals
MOTOR	Output terminal, connect with AC pump
SENSOR	Water level sensor signal input terminal (optional)
COM	RS485 or GPRS communication interface (optional)
⏚	Ground terminal

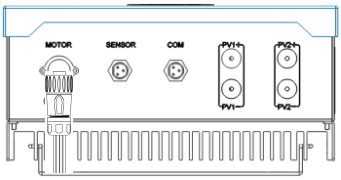
7.2 Cable Selection for Electrical Connection

User can select cables for electrical connection according to the following specifications.

Inverter	Cable range（AWG）			Cable recommended（AWG）		
	DC side	AC side		DC side	AC side	
	PV+、PV-	U、V、W	PE	PV+、PV-	U、V、W	PE
JNP3KL	14-12	14-12	12	12	12	12
JNP3K7L	14-12	14-12	12	12	12	12

7.3 AC Side Electrical Connection

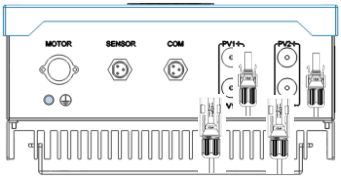
Please refers to the chapter “3.3 AC Side Electrical Connector”.



7.4 DC Side Connection

Danger！**DC side electric connection** must be off, otherwise, it may cause casualty!

Please refers to “3.4 DC Side Connection”.

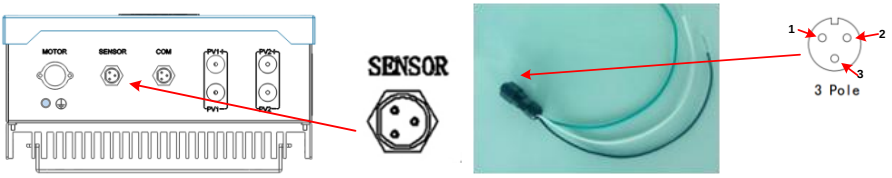


7.5 Inverter grounding

Make sure the reliable connection between ground ⏚ terminal of Inverter and the earth!

7.6 Water Level Sensor Connection

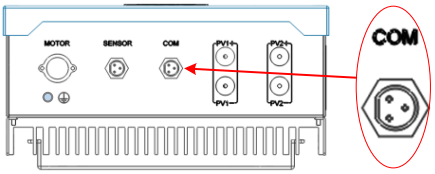
Water level sensor connector pins in inverter panel port are defined are shown below:



The define of water level sensor connector pins and the installation of water level sensor refer to “3.6 Water level sensor connection”.

7.7 Communication connection

Communication connector pins in inverter panel port are defined are shown below:



Note：More information about the communication module, please refer to the **User and Installation Manual**.

8 Disassembling

8.1 The Disassembling of PV Connector

Please refers to “4.1 The Disassembling of PV Connector”.

8.2 The Disassembling of AC Connector

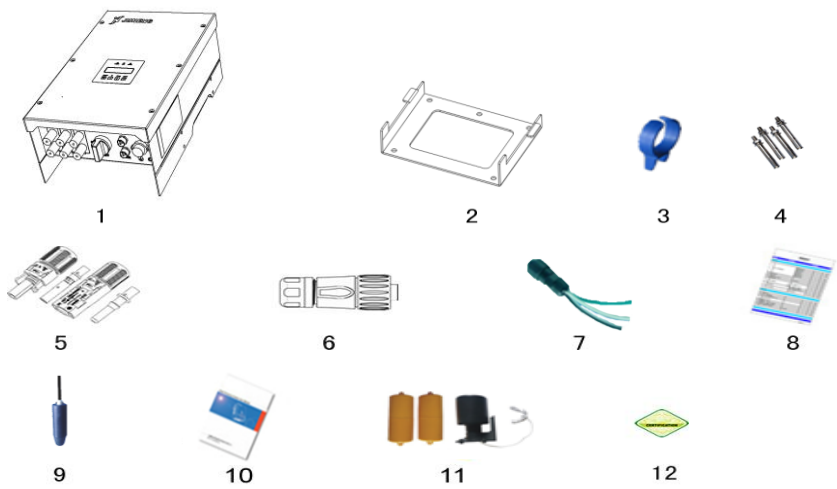
Please refers to “4.2 The Disassembling of AC Connector”.

Quick Installation Guideline for solar pumping inverter – JNP2K2H JNP3KH JNP3K7H JNP4KH JNP5K5H JNP7K5H and JNP4KL

9. Inverter Unpacking

Check according to Packing List whether all the parts are correct and in good condition.

Accessories are shown as below:



No.	Description	No.	Description
1	PV pump inverter	7	Sensor and communication connector (Optional)
2	Installation bracket	8	Packing list
3	Blue Ring tool	9	Water level sensor (Optional)
4	Expansion bolt	10	Quick Installation Guideline
5	PV connector	11	Water level sensor (Optional)
6	AC connector	12	Certificate of inspection

10. Installation

10.1 Prepare Installation Tools

Please refers to “2.1 Prepare Installation Tools”.

10.2 Installation Direction and spacing dimension

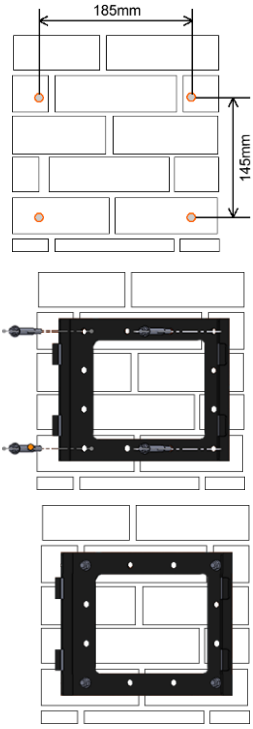
Please refers to “2.2 Installation Direction and spacing dimension”.

10.3 Installation of Inverter

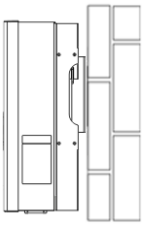
Step1:
Drill holes in the selected installation position according to the size and shape of installation bracket.

Step2:
Fix installation bracket in the located holes with bolts.

Step3:
Tighten the bolts, make the bolts cling to the wall.



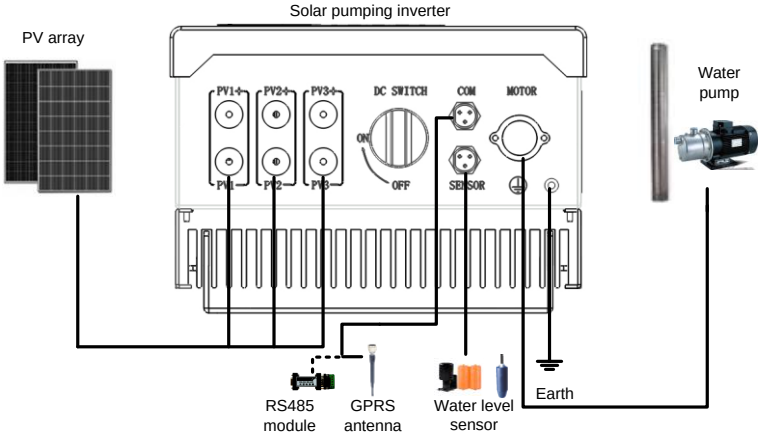
Step4:
Hang firmly inverter onto the installation bracket, then lock the hole.



11 Electrical Connection

11.1 Connecting Terminals of Inverter

The input and output terminals are shown as below:



Terminals Description

Terminals	Description
PV1+/ PV2+/PV3+	PV array DC positive input terminals
PV1-/ PV2-/PV3-	PV array DC negative input terminals
DC SWITCH	DC terminal switch
MOTOR	Output terminal, connect with AC pump

SENSOR	Water level sensor signal input terminal (optional)
COM	RS485 or GPRS communication interface (optional)
⏚	Ground terminal

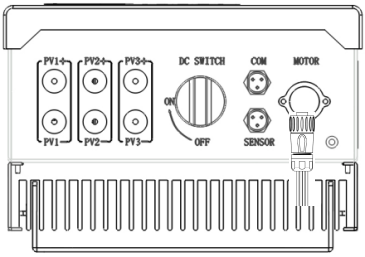
11.2 Cable Selection for Electrical Connection

User can select cables for electrical connection according to the following specifications.

Inverter	Cable range（AWG）			Cable recommended（AWG）		
	DC side	AC side		DC side	AC side	
	PV+,PV-	U,V,W	PE	PV+,PV-	U,V,W	PE
JNP4KL	14-12	14-12	12	12	12	12
JNP2K2H	14-12	14-12	10	12	12	10
JNP3KH	14-12	14-12	10	12	12	10
JNP3K7H	14-12	14-12	10	12	12	10
JNP4KH	14-12	14-12	10	12	12	10
JNP5K5H	14-12	14-12	10	12	12	10
JNP7K5H	14-12	14-12	10	12	12	10

11.3 AC Side Electrical Connection

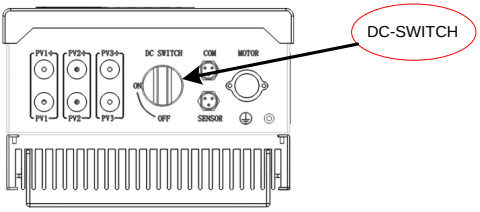
Please refers to the chapter “3.3 AC Side Electrical Connector”.



11.4 DC Side Connection

Danger! DC switch must be off, otherwise, it may cause casualty!

Please refers to “3.4 DC Side Connection”.

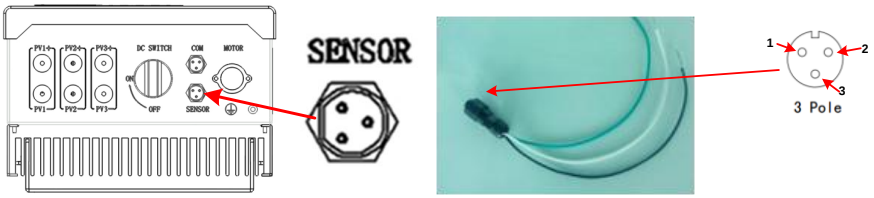


11.5 Inverter grounding

Make sure the reliable connection between ground terminal of Inverter and the earth!

11.6 Water Level Sensor Connection

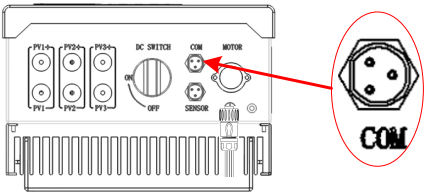
Water level sensor connector pins in inverter panel port are defined are shown below:



The define of water level sensor connector pins and the installation of water level sensor refer to “3.6 Water level sensor connection”.

11.7 Communication connection

Communication connector pins in inverter panel port are defined are shown below:



Note：More information about the communication module, please refer to the **User and Installation Manual**.

12 Disassembling

12.1 The Disassembling of PV Connector

Please refers to “4.1 The Disassembling of PV Connector”.

12.2 The Disassembling of AC Connector

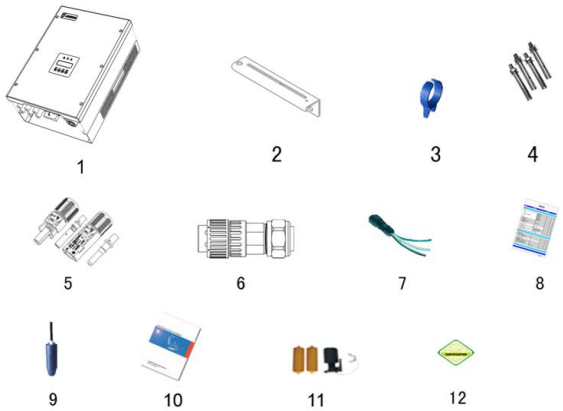
Please refers to “4.2 The Disassembling of AC Connector”.

Quick Installation Guideline for solar pumping inverter – JNP11KH JNP15KH JNP18K5H

13. Inverter Unpacking

Check according to Packing List whether all the parts are correct and in good condition.

Accessories are shown as below:



No.	Description	No.	Description
1	PV pump inverter	7	Sensor and communication connector (Optional)
2	Installation bracket	8	Packing list
3	Blue Ring tool	9	Water level sensor (Optional)
4	Expansion bolt	10	Quick Installation Guideline
5	PV connector	11	Water level sensor (Optional)
6	AC connector	12	Certificate of inspection

14.Installation

14.1 Prepare Installation Tools

Please refers to “2.1 Prepare Installation Tools”.

14.2 Installation Direction and spacing dimension

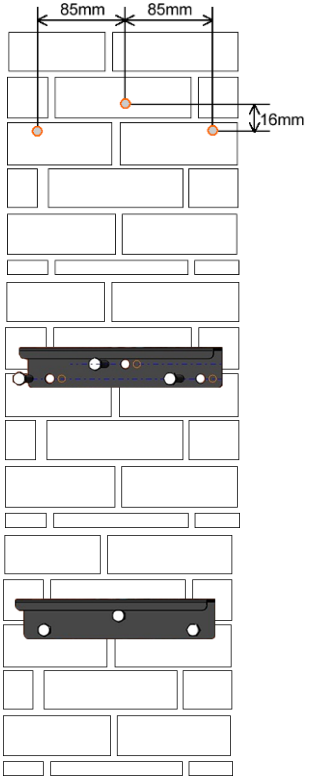
Please refers to “2.2 Installation Direction and spacing dimension”.

14.3 Installation of Inverter

Step1:
Drill holes in the selected installation position according to the size and shape of installation bracket.

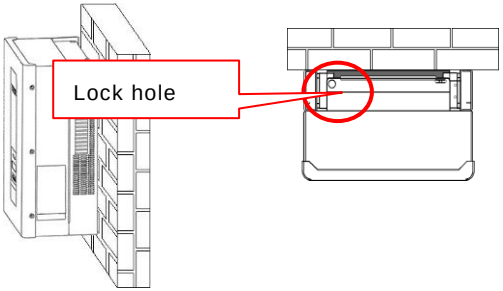
Step2:
Fix installation bracket in the located holes with bolts.

Step3:
Tighten the bolts, make the bolts cling to the wall.



Step4:

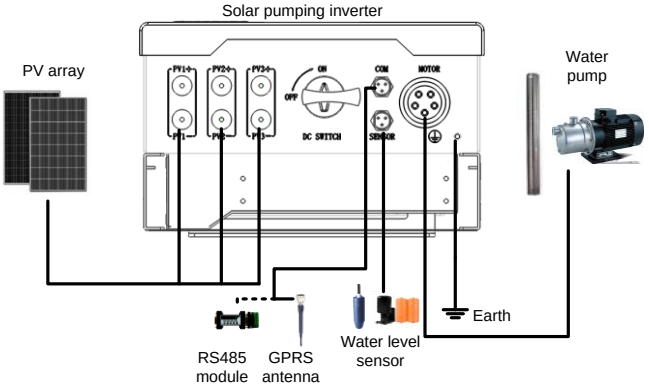
Hang firmly inverter onto the installation bracket, then lock the hole.



15 Electrical Connection

15.1 Connecting Terminals of Inverter

The input and output terminals are shown as below:



Terminals Description

Terminals	Description
PV1+/ PV2+/PV3+	PV array DC positive input terminals
PV1-/ PV2-/PV3-	PV array DC negative input terminals
DC SWITCH	DC terminal switch
MOTOR	Output terminal, connect with AC pump

SENSOR	Water level sensor signal input terminal (optional)
COM	RS485 or GPRS communication interface (optional)
⏚	Ground terminal

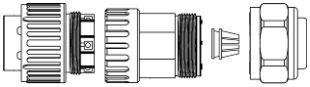
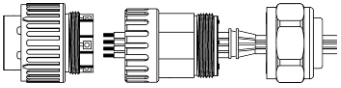
15.2 Cable Selection for Electrical Connection

User can select cables for electrical connection according to the following specifications.

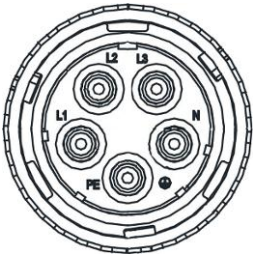
Inverter	Cable range（AWG）			Cable recommended（AWG）		
	DC side	AC side		DC side	AC side	
	PV+,PV-	U,V,W	PE	PV+,PV-	U,V,W	PE
JNP11KH	12	8	10	12	8	10
JNP15KH	12	8	10	12	8	10
JNP18K5H	12	8	10	12	8	10

15.3 AC Side Electrical Connection

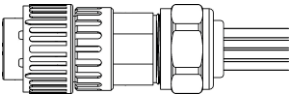
Step1: Connecting of the wire of the connector:

Operation Instruction	Operation Demonstration
1. Unscrew the terminal of all components.	
2. Prepare the cable and bare the ends of U,V,W and PE wire in 7mm. Insert the cable through the nut and middle sleeve.	

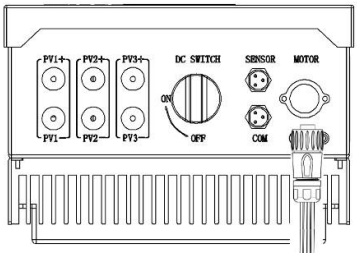
3. Insert the bared U,V,W and PE wires ends into the corresponding four holes of the connector terminal and then fully tighten all screws. The polarity of each hole is signed around the holes. Please note that wire U must be connected to hole 1, wire V to hole 2, wire W to hole 3, and wire PE to hole ⏚.



4. After fasten the wires with the terminal, combine every component together, and screw them tightly.



Step2**:** Plug the AC connector into the motor terminal at the bottom of the inverter, tighten the nut of connector.

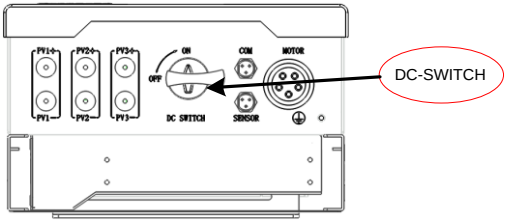


Note ! The phase sequence of AC pump and inverter should be corresponding, and if connection error occurs, there will be no water output or only with small water flow. Phase sequence's connection is right or not shall be inspected when it's trial running for the first time.

15.4 DC Side Connection

Danger! DC switch must be off, otherwise, it may cause casualty!

Please refers to “3.4 DC Side Connection”.

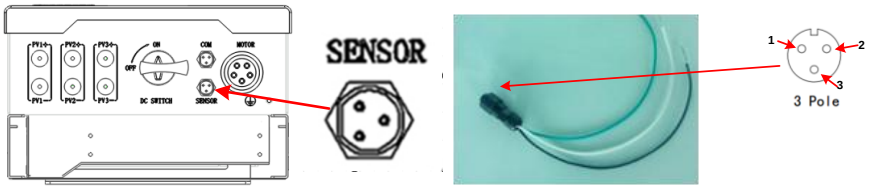


15.5 Inverter grounding

Make sure the reliable connection between ground ⏚ terminal of Inverter and the earth!

15.6 Water Level Sensor Connection

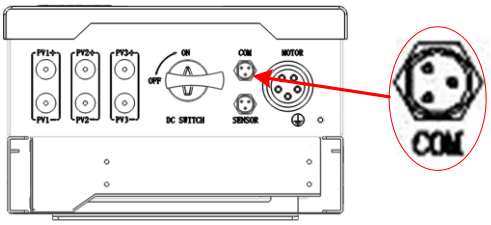
Water level sensor connector pins in inverter panel port are defined are shown below:



The define of water level sensor connector pins and the installation of water level sensor refer to “3.6 Water level sensor connection”.

11.7 Communication connection

Communication connector pins in inverter panel port are defined are shown below:



Note：More information about the communication module, please refer to the **User and Installation Manual**.

16 Disassembling

16.1 The Disassembling of PV Connector

Please refers to “4.1 The Disassembling of PV Connector”.

16.2 The Disassembling of AC Connector

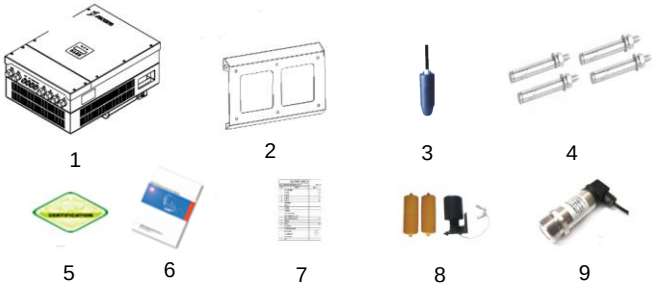
Please refers to “4.2 The Disassembling of AC Connector”.

Quick Installation Guideline for solar pumping inverter – JNP22KH JNP30KH JNP37KH JNP45KH JNP55KH

17. Inverter Unpacking

Check according to Packing List whether all the parts are correct and in good condition.

Accessories are shown as below:



No.	Description	No.	Description
1	PV pump inverter	6	Quick Installation Guideline
2	Installation bracket	7	Packing list
3	Water level sensor (Optional)	8	Water level sensor (Optional)
4	Expansion bolt	9	Pressure sensor (Optional)
5	Certificate of inspection		

18. Installation

18.1 Prepare Installation Tools

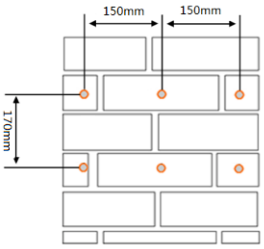
Please refers to “2.1 DC Side Connection”.

18.2 Installation Direction and spacing dimension

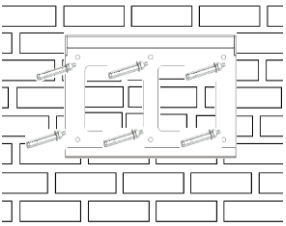
Please refers to “2.2 Installation Direction and spacing dimension”.

18.3 Installation of Inverter

Step1:
Drill holes in the selected installation position according to the size and shape of installation bracket.

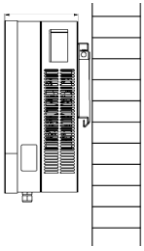


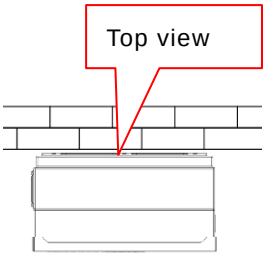
Step2:
Fix installation bracket in the located holes with bolts.



Step3:
Tighten the bolts, make the bolts cling to the wall.

Step4:
Hang firmly inverter onto the installation bracket, then lock the hole.

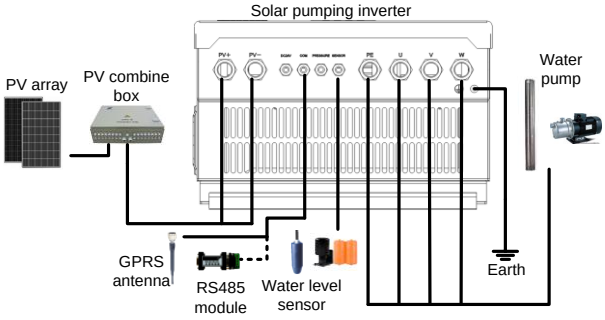




19 Electrical Connection

19.1 Connecting Terminals of Inverter

The input and output terminals are shown as below:



Terminals Description

Terminals	Description
PV+	PV array DC positive input terminals
PV-	PV array DC negative input terminals
DC24V	24V DC power supply output terminal
COM	RS485 or GPRS communication interface (optional)
PRESSURE	Pressure sensor connection terminals
SENSOR	Water level sensor signal input terminals, it is optional, if no need, this terminal will not be installed.
U\V\W\PE	Output terminal, connect with AC pump
⏚	Ground terminal

19.2 Cable Selection for Electrical Connection

User can select cables for electrical connection according to the following specifications.

Inverter	Cable range（AWG）			Cable recommended（AWG）		
	DC side	AC side		DC side	AC side	
	PV+、PV-	U、V、W	PE	PV+、PV-	U、V、W	PE
JNP22KH	5	5	5	5	5	5
JNP30KH	4	4	5	4	4	5
JNP37KH	3	3	5	3	3	5
JNP45KH	1	3	5	1	3	5
JNP55KH	1/0	1	5	1/0	1	5

19.3 DC Side Connection

Danger!

When carry out connection of PV array and inverter, the PV array should be covered with opaque materials and the DC connect should be off, otherwise, the PV array may generate dangerous voltage, cause casualty. The non-professionals prohibit to operate.

Step1: Please connect the wire of the DC connector according to the following steps:

Operation Instruction	Operation Demonstration

1. Loosen the fastening nut of waterproof terminals.	
2. Put the cable through the waterproof terminal, then the cable and terminal go through the corresponding hole of the chassis together.	
Crimp figure.	
3. Put the cable through the waterproof terminal, then put the cable through the fastening nut inside the chassis. Fix the waterproof terminal to the chassis.	

4. Screw the waterproof terminals.	
DC terminal effect figure inside.	
DC terminal effect figure outside.	

Step2: Ensure that the DC-side PV combine box are in off state.

Step3: Ensure that the positive and negative poles of PV array are connected rightly.

Step4: Plug the positive and negative connectors into the corresponding terminals at the

bottom of the inverter respectively.

19.4 AC Side Electrical Connection

Step1: connector wire connection:

Please connect the wire of the AC connector according to the following steps:

Operation Instruction	Operation Demonstration
The AC waterproof terminals are the same as DC terminals, please connect the cable consulting DC side connection.	

19.5 Inverter grounding

Make sure the reliable connection between ground ⏚ terminal of Inverter and the earth!

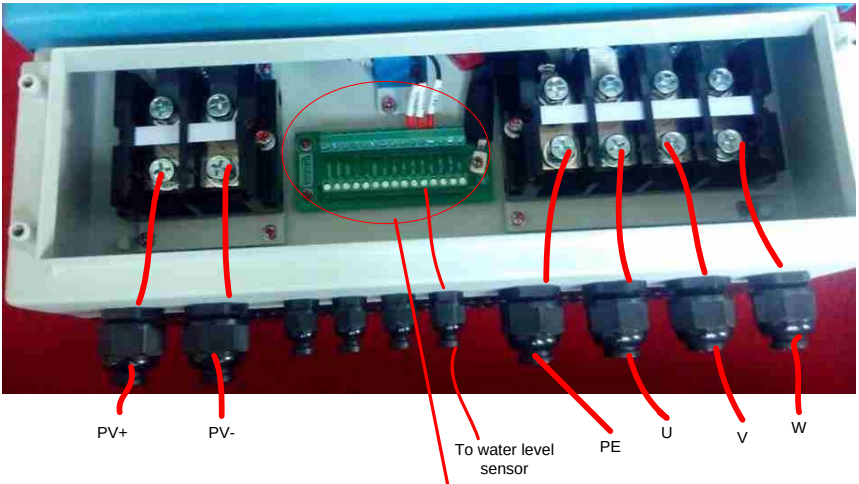
19.6 Water Level Sensor Connection

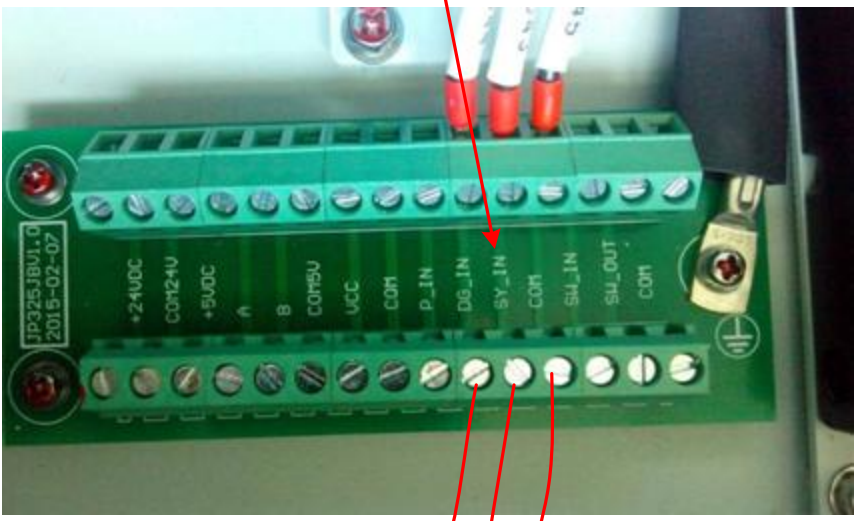
19.6.1 **Water level sensor interface define**

Water level sensor connector pins in inverter panel port are defined are shown below:

Terminal（SENSOR） connector pin	Detail
DG_IN	Dry protection pin, connect to water level sensor of pump dry protection
SY_IN	Overflow protection pin, connect to water level sensor of overflow protection
COM	Dry protection and Overflow protection common pin, connect to water level sensor of pump dry protection and water level sensor of overflow

	protection


PV+
PV-
To water level sensor
PE
U
V
W


JP325JBV1.0
2015-02-07
+24VDC
COM24V
+5VDC
A
B
COM5V
VCC
COM
P_IN
DG_IN
SY_IN
COM
SW_IN
SW_OUT
COM
DG_IN
SY_IN
COM

19.6.2 **Water level sensor connection**

Two kinds of water level sensor you can select are shown below:

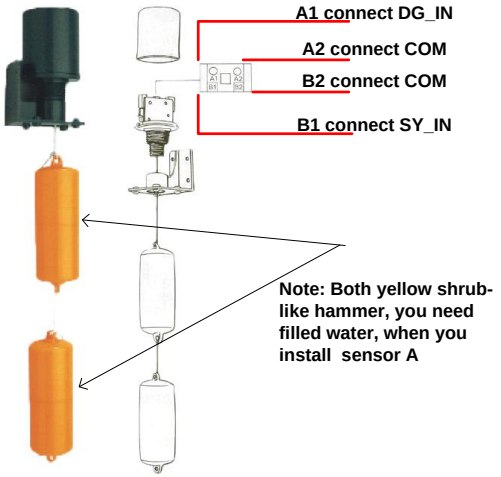
Sensor A

Sensor B

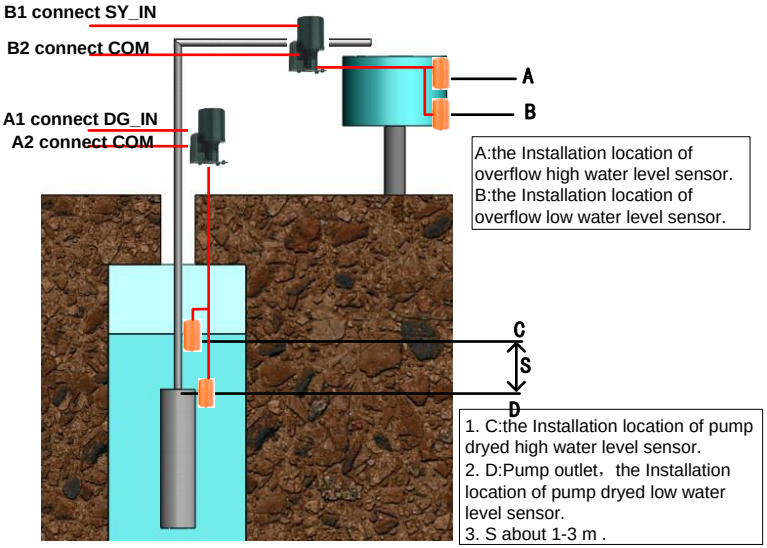
Notice!

If you select overflow protection water level sensor, you need to set the value of “OF-F”, the LCD menu ”Settings” → "Para Set" → "OF-F" to modify to “ON”. The setting method with reference to “5.3.1 Modify motor parameters” .

If you selected water level sensor A, then water sensor installation method is shown below:

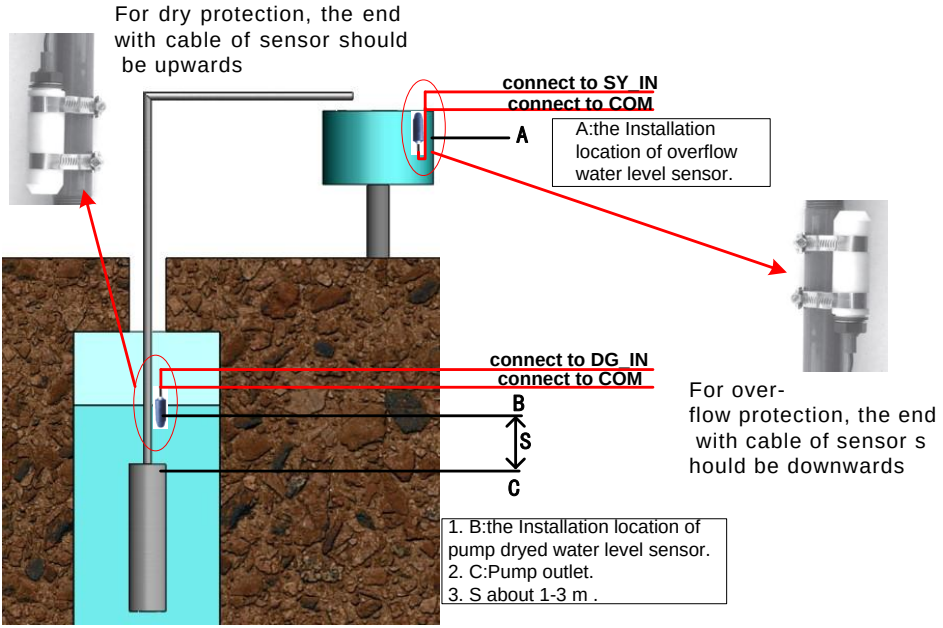


The detail figure of Sensor A



The installation figure of Sensor A

If you selected water level sensor B, then water sensor installation method is shown below:



The installation figure of Sensor B

Notice!

If you choose Water Level Sensor B, please note the following aspects when intall:

1. For dry protection, the end with cable of sensor should be upwards;

2. For over-flow protection, the end with cable of sensor should be downwards.

19.7 Communication connection

Note：More information about the communication module, please refer to the **User and Installation Manual**.

20 Disassembling

20.1Safety Instruction

Warning!

Please take the following steps to open the inverter:

- Turn off the DC side breakers.
- Waiting for a few minutes to ensure the inverter is uncharged.
- Please don't insert and pull out of any connector when the inverter is in a state of charged. Otherwise, it would cause the personal injury and equipment damage.

Notice!

Electrostatic discharging will cause damage to the inner parts of the inverter. We shall carry out the antistatic measure before disassembling and installation.

20.2The Disassembling of Connector

Waterproof terminal in this machine is threading terminal. It is easy to disassemble and install. No need special tools.

Please take the following steps:

Operation instructions	Demonstration picture

1. Screw out the fastening nut of the threading terminal in counterclockwise direction.	
2. Unplug the cable	

Commissioning Guideline for solar pumping inverter

21 Commissioning

21.1 Verify before Commissioning

PV Arrays

The PV array should be checked before operating the inverter, and to ensure that the positive and negative mustn't be misconnect, Make sure that the open-circuit voltage of photovoltaic array doesn't exceed the required voltage.

DC Input

Make sure that the DC terminals of the inverter are connected correctly and maintained consistent with the PV array.

AC Output

Make sure that the AC-side of inverter is connected correctly, and phases of AC-side are connected correctly.

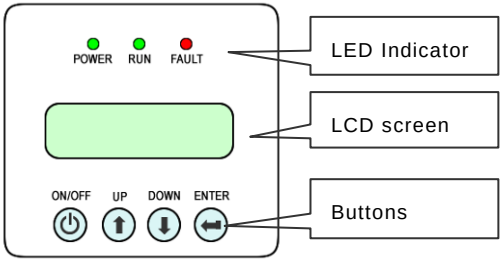
Verify of the water pump motor parameters

Check the electrical parameters on water pump motor nameplate: the rated input voltage and input current frequency, to ensure inverter is matched with the pump.

After finishing the above information, then begin initialization.

21.2 LCD Panel Operating Instructions

Inverter LCD Display



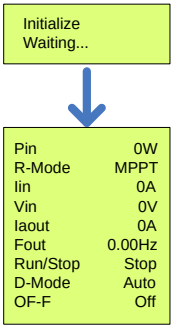
LED Indicator	Name	Color	Instructions
POWER	Power light	Green	Light on When power on
RUN	Running light	Green	Light on under normal operation
FAULT	Faulty light	Red	Light on when error occur, off when error be cleared

Buttons	Functions
"ON/OFF"	Press for 4s to get it started.
"UP"	Page up or increase parameter data.
"DOWN"	Page down or decrease parameter data.
"ENTER"	To choose and confirm.
"DOWN+ENTER"	Return to main interface.

Note! When inverter power on, LCD screen background is lighted, and after 30s' normal running, the background light turns off.

21.3 Commissioning for JNP1K1L~JNP18K5H

Switch on inverter's DC switch or DC side electric connection, inverter start initialization.



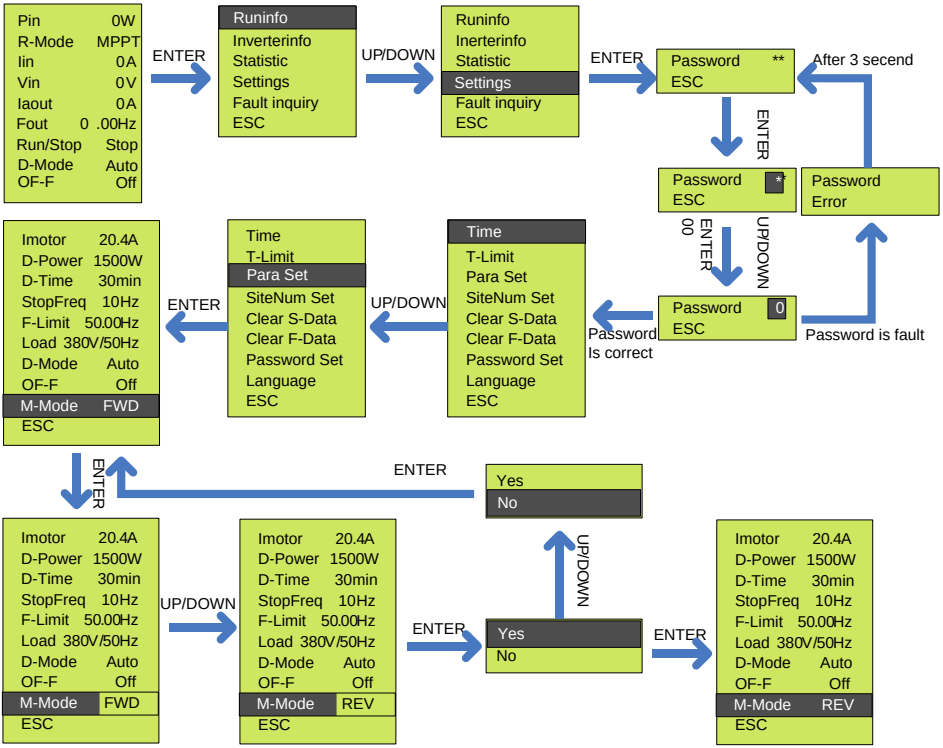
Note!

- At the first running, ender user need to long-press "ON / OFF" key for 4 seconds around, then inverter start to run.
- Stop inverter, press "ON / OFF" key (1 second around), inverter shut down.

If the water output is very small or even no water output, please check the following two points:

1) Sun radiation is not strong enough;

2) Pump reverse, modify the inverter parameters, change the LCD menu "M-Mode", the factory default is "FWD" can be changed to "REV", thus adjustable steering pump, increase the water, solar pumping system running at peak performance, set as follows:



Parameter Settings Figure

21.3.1 Rated current confirmation of pump motor

In the first commissioning of solar pumping systems, you need to set the overload protection value of Inverter based on the rated current of pump motor, please refers to the above “Parameter Setting”.

Setting principle: The value of “Imotor” should be set to 1.0 times of the rated current of pump motor. If inverter alarm Fault5 during operation, Imotor can be increased by 5% each time till system can normal running.

21.3.2 Time Calibration

The initial time shown on the inverter is based on Beijing time zone. Please reset time if it doesn't match local time, so that the inverter can record daily, total generating capacity and historical faults information.

Please refer to the above “Parameter Setting” for details.

21.3.3 Stop Frequency Setting

When finish the first commissioning successfully, need to set the system stop frequency as following.

Step 1: Ensure the system is running and there has water output, enter to ”StopFreq”**.**

Step 2: To reduce the value of “StopFreq”. Reduce by 5Hz each time and press "ENTER" to check the system performance. Keep reducing the value till the water just can not come out. Then adjust the value slightly until the water just come out, this value is the very data of StopFreq.

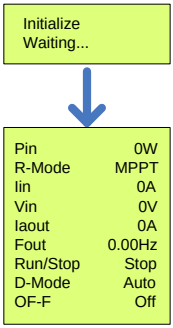
So far, your solar pumping systems first commissioning is completed!

Thank you for using green energy!

21.4 Commissioning for JNP22KH~JNP55KH

21.4.1 Modify motor parameters

After confirming both of the input and output connection are in correct way, then switch on DC switch, then LCD screen will show information as below.



The inverter should set the motor parameters before operation, the parameters including rated voltage, rated current, rated power ,rated frequency, rated rotor speed and power factor. The motor nameplate parameters information should be related to the inverter parameters. Below take Siemens motor and inverter parameters as example.

Table: motor nameplate as example

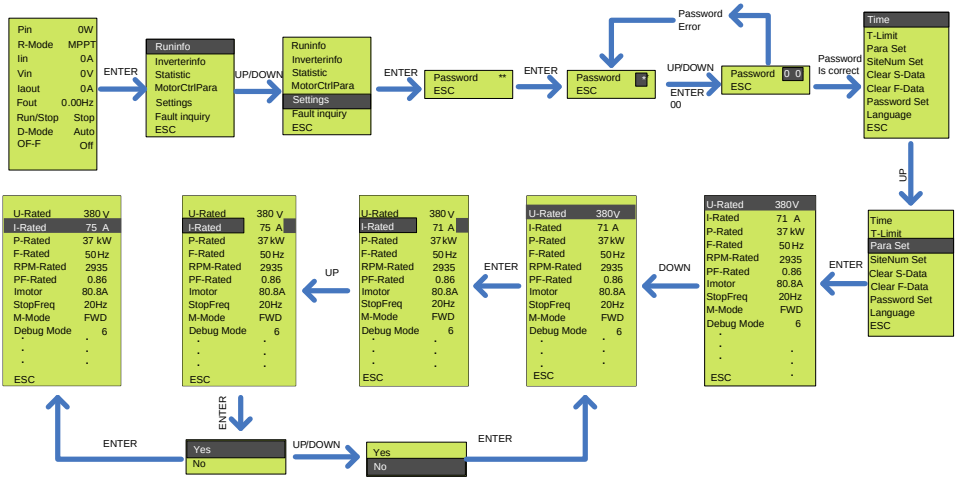
SIEMENS		
THREE-PHASE ASYNCHRONNOUS INVERTER DUTYMOTOR		
3~MOT		
37KW 380V/50Hz	Current 71A	COSΦ0.86
IP55IM.1080Kg	Torque 1285N.M	TH.CI.155UF
Constant Torque 10-50Hz	Speed 1488r/min	Q/321081 KJA005-2012
	BRGDE 03193	
SIEMENS LTD.,CHINA		

Table: motor nameplate's parameters contrast to inverter

Motor parameters	data	The inverter parameters	data
Voltage	380V	U-Rated	380V
Current	75A	I-Rated	75A
Power	37KW	P-Rated	37KW
Frequency	50Hz	F-Rated	50Hz

Speed	1488r/min	RPM-Rated	1488r/min
COSφ (P.F.)	0.86	PF-Rated	0.86

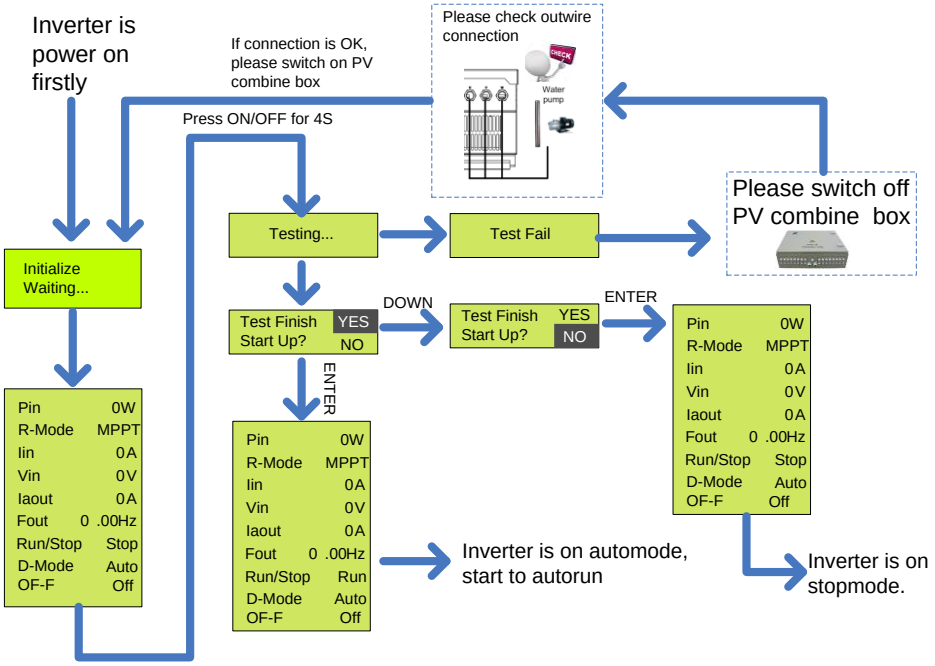
After confirming the needed parameters of inverter, enter the motor parameters interface of LCD displayed screen. The parameters should be the same as listed in table. The detailed operating processes are shown as below.



Note: Motor parameters should be reset when change pump, output voltage and output frequency must keep same.

21.4.2 The test of motor parameters and commissioning

After modify the motor parameters, long-press the “ON/OFF” button to enter into testing status of motor parameters, when test succeed, then press “ENTER” to run, the details as below showed.



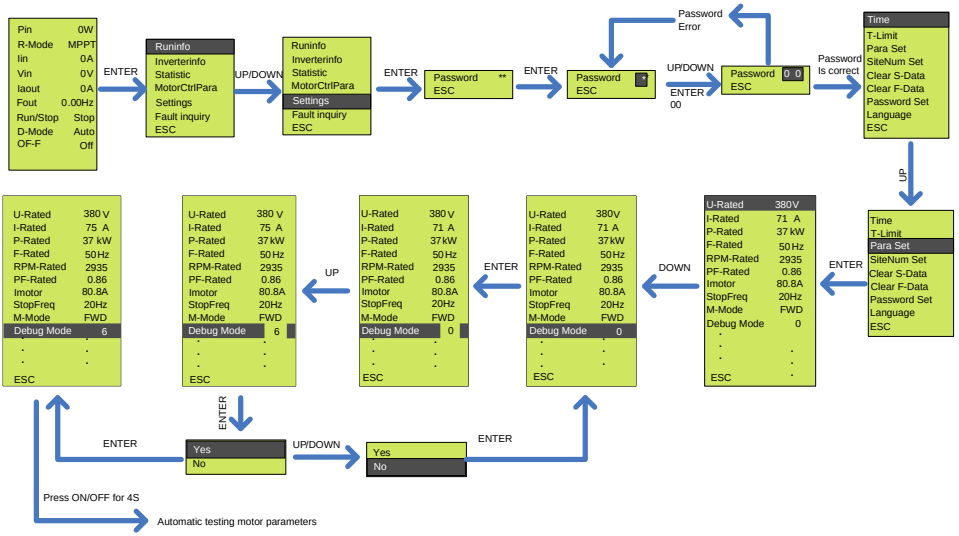
The test of motor parameters and commissioning sketch figure

1. If the test failed, please check whether the inverter output and the motor wiring connection is in good condition or not, and AC breaker (if has) should be on!

2..After the motor parameters test successfully, then choose “YES” and press “ENTER” to start up.

3. Press "ON / OFF" for one second, to shut down the inverter.

Note： Motor parameters’ testing must be done again when change pump, please ensure motor parameters’ reset before re-testing! Re-testing processes are shown below:



Note:

If Solar Pumping System cannot pump water out and inverter display “state 09”, it may caused by air leak of pipe system, or long-time air discharge because of long pipe system. Please take measures according to the following steps:

First step: Check whether the pipe system is in good condition or not? If it’s good, please enter into LCD Menu “setting”→”Para Set” to modify “T-DJ” to “300S”. If system still cannot work, please increase “T-DJ” again, and start inverter. Meanwhile, record the time (T) from start up to stable water outgoing.

Second step: “T-DJ” should be set as T+10S.

Note:

If your solar pumping system has no flow, or the actual flow is less, may have the following two reasons:

1) Weak sunshine;

2) The pump reverse, modify the inverter parameters, change the LCD menu "M-Mode", the factory default is "FWD" can be changed to "REV", thus adjustable steering pump, increase the water, solar pumping system running at peak performance, Please refers to the above “Parameter Setting” for details.

21.4.3 Pump motor rated current confirmation

The Initial commissioning solar pumping systems, you need to set the value of the inverter overload protection according to the pump motor nameplate rated motor current value, the LCD menu ”Settings” "Para Set" "Imotor" to modify. The setting method with reference to the above “Parameter settings Figure” .

Setting principle: the value of "Imotor" should be set to 1.0 times the rated current value of the motor nameplate. If inverter alarm Fault5 during operation, “Imotor” can be increased by 5% each time till system can normal running.

21.4.4 Time Calibration

Please refer to “21.3.2 Time Calibration”.

21.4.5 Stop Frequency Setting

Please refer to “21.3.3 Stop Frequency Setting”.

At this point, congratulations! Your photovoltaic pumping systems first test running is completed! Thank you for using green energy, in order to improve our living environment contribution.

22 Appendix: Troubleshooting

Stop condition and troubleshooting

Status Code	Phenomena	Reason	Troubleshooting
State 01 PV Array under-voltage	Inverter shutdown and will automatically restart after it disappear	Output energy from PV array is not enough	Please check PV input voltage and make sure the voltage is within inverter input voltage range. Note: In cloudy days, morning and late in afternoon, this situation is normal.
State 09 Dry alarm	Inverter shut down till the water level reach the higher water level sensor, inverter can restart automatically.	Water level of water source is lower than lower level sensor, even lower than inlet of pump.	1. Please check the water level, if the water level is ok, please check whether there have air inside pump or not. 2. Please check the position of water level sensor.
State 10 Weak sunshine	Inverter shutdown. The status disappear, inverter can restart automatically.	The energy produced by PV array is low.	Usually appears in early morning, late in the afternoon and cloudy days. This situation is aim to protect the motor of pump.
State 14 Overflow alarm	Inverter shut down till water level in tank is higher than higher water level sensor, and it can restart automatically when the status disappears	Water level in tank is higher than higher level alarm of set	If this situation appears more than once, please check onsite and set the water level sensor at a proper height.

Malfunction and troubleshooting

Fault code	Phenomena	Reason	Troubleshooting
Fault00 Driver over-current	Inverter shutdown and will restart automatically after the fault disappears	1. Short circuit of inverter output wires; 2. Hardware circuit damage	Please check whether there have short circuit situation between 3 phase output wires
Fault05 Over-load	Inverter shutdown and will restart automatically after the fault disappears	The capacity of load is higher than rated output power of inverter.	Please make sure the system is proper designed. The power of pump motor should not be higher than inverter output.
Fault08 AC over-current	Inverter shutdown and will restart automatically after the fault disappears	1. The capacity of load is higher than rated output power of inverter. 2. Motor occurs locked-rotor; 3. Pipe system design is not reasonable	1. Inspect pump motor; 2. Inspect pipe system
Fault11 Temp. sensor fault	Inverter shut down	Temp. sensor inside inverter loosen or damage	Please contact supplier.
Fault12 Short-circuit	Inverter shutdown, non-recover malfunction. No automatically restart, only if recharged	Output wire short circuit.	1. Please check if there is short circuit in output wires. 2. If this happen frequently, please contact supplier.

Fault15 Shortage-phase output	Inverter shutdown and will restart automatically after the fault disappears	The wires' connection between inverter and pump appear fault	Please check if the output wires are proper connected and fixed.